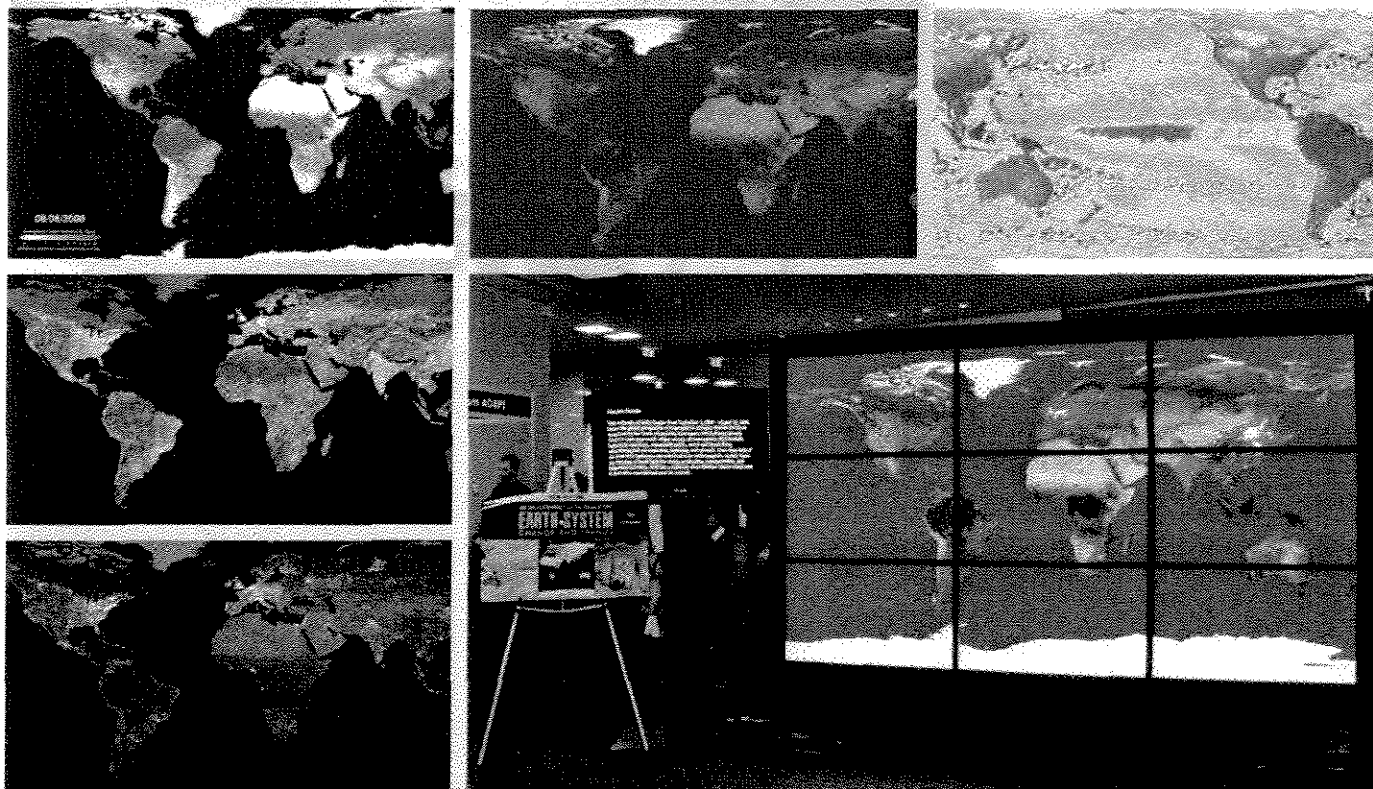




# NASA'S HYPERWALL

## REVEALING THE BIG PICTURE



[eosps0.gsfc.nasa.gov/hyperwall/](http://eosps0.gsfc.nasa.gov/hyperwall/)

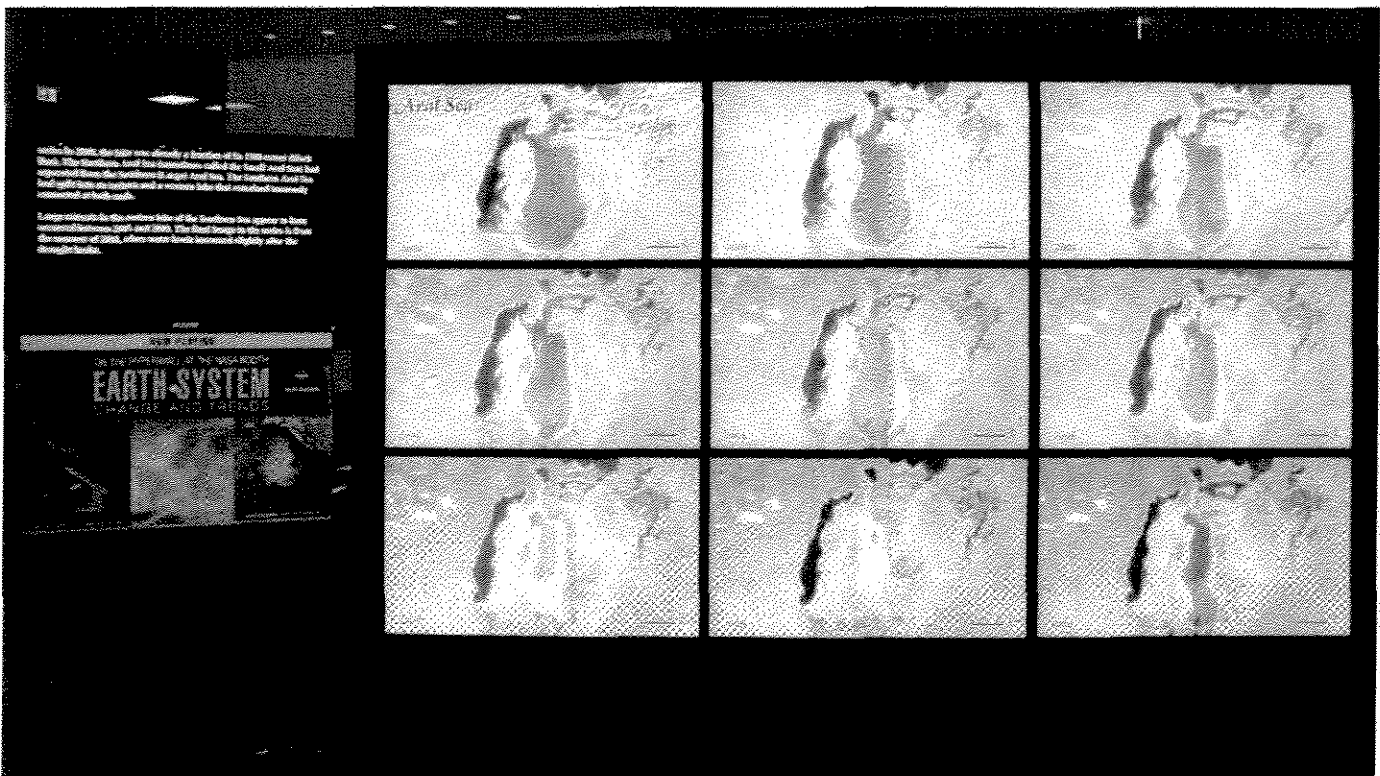
## WHAT IS THE HYPERWALL?

NASA's *hyperwall* is a sophisticated visualization tool used to display large datasets. The hyperwall, or video wall, is capable of displaying multiple high-definition data visualizations and/or images simultaneously across an arrangement of screens. Functioning as a key component at many NASA exhibits, the hyperwall is used to help explain phenomena, ideas, or examples of world change.

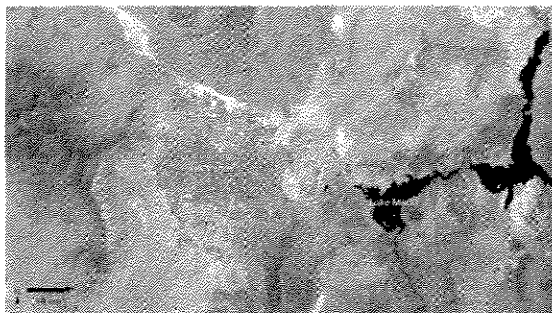
The traveling version of the hyperwall is typically comprised of nine 42-50" flat-screen monitors arranged in a 3x3 array (as depicted below). However, it is not limited to monitor size or number; screen sizes can be as large as 52" and the arrangement of screens can include more than nine monitors. Generally, NASA satellite and model data are used to highlight particular themes in atmospheric, land, and ocean science. Many of the existing hyperwall stories reveal change across space and time, while others display large-scale still-images accompanied by descriptive, story-telling captions.

Hyperwall content on a variety of Earth Science topics already exists and is made available to the public at: [eospso.gsfc.nasa.gov/hyperwall](http://eospso.gsfc.nasa.gov/hyperwall). Keynote and PowerPoint presentations as well as *Summary of Story* files are available for download on each existing topic.

New hyperwall content and accompanying files will continue being developed to promote scientific literacy across a diverse group of audience members. NASA invites the use of content accessible through this website but requests the user to acknowledge any and all data sources referenced in the content being used.

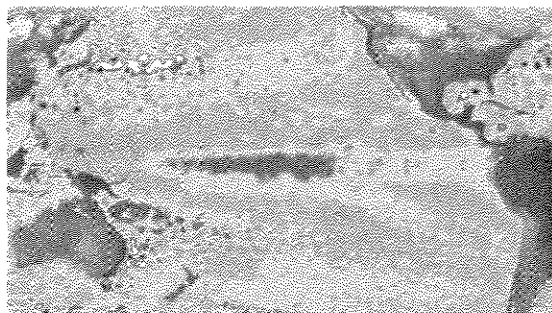


### URBAN GROWTH, LAS VEGAS, NV (1972-2010)



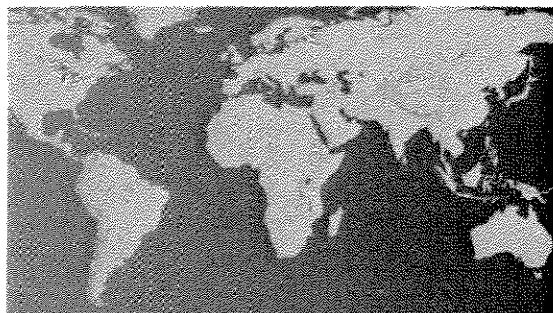
Landsat time series of urban sprawl in Las Vegas, NV from 1972-2010.

### 2009 EL NIÑO & 2010 LA NIÑA



*AVISO - Archiving, Validation and Interpretation of Satellite Oceanographic data*  
Sea Surface Height Anomalies reveal a change from El Niño to La Niña from 2009-2010.

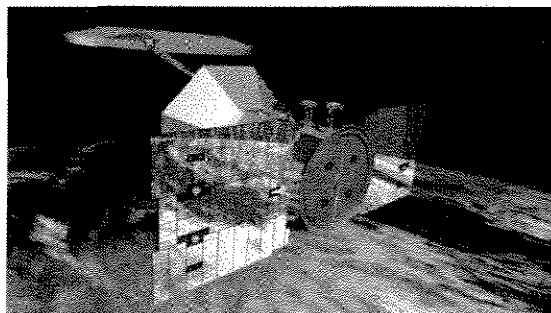
### AQUA/AIRS CARBON DIOXIDE, 2002-2009, WITH MAUNA LOA CARBON DIOXIDE GRAPH



*Aqua - Atmospheric Infrared Sounder (AIRS)*

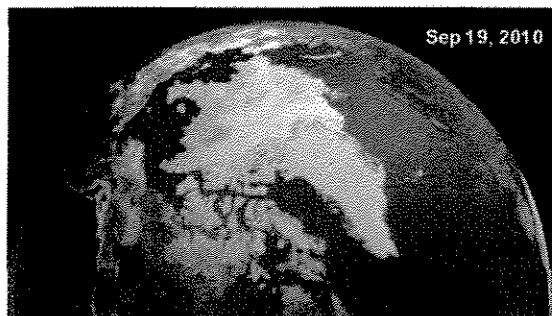
This visualization is a time series of the global distribution and variation of mid-tropospheric carbon dioxide concentrations observed by the Atmospheric Infrared Sounder on NASA's Aqua satellite.

### AQUARIUS



This visualization reveals the external instrumentation on Aquarius as it orbits Earth.

### ARCTIC SEA ICE MINIMUM EXTENT FOR 2010



*Aqua - Advanced Microwave Scanning Radiometer for EOS (AMSR-E)*

Arctic sea ice and seasonal land cover change from March 31, 2010 (maximum) to September 19, 2010 (minimum).

### EARTH AT NIGHT

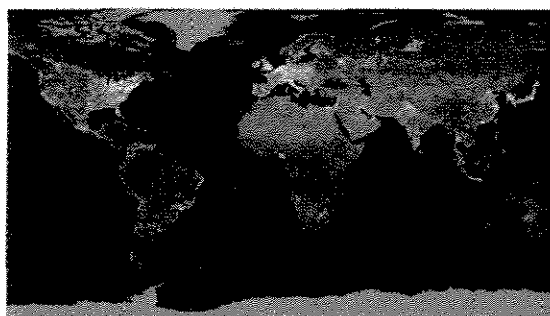
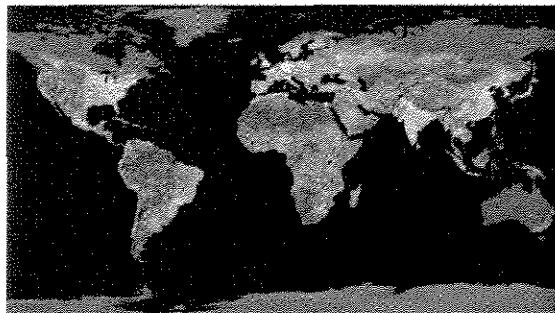


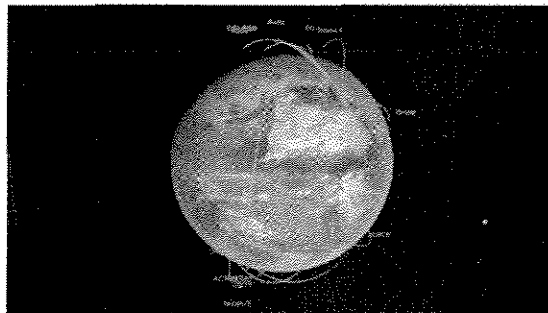
Image of Earth's city lights at night created with data from the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS).

## GRIDDED POPULATION OF THE WORLD



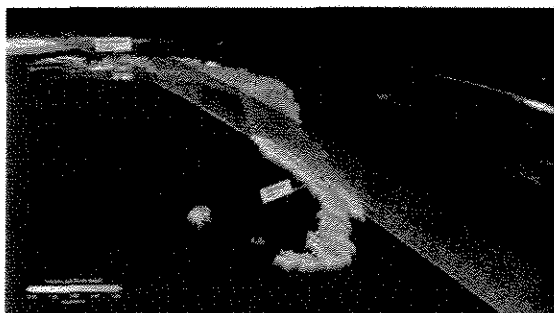
Gridded Population of the World, version 3 depicts the distribution of human population across the globe, including estimates into 2015.

## EARTH-OBSERVING FLEET WITH GEOS-5 CLOUDS



This visualization reveals NASA's Earth observing fleet of spacecraft. Another animation depicts satellites that are currently operational.

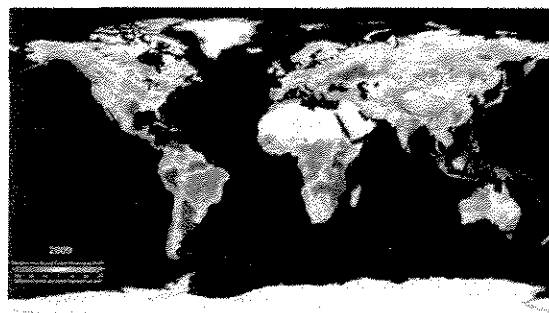
## ICELAND'S EYJAFJALLAJÖKULL VOLCANIC ASH PLUME MAY 6-8, 2010



*CALIPSO - CALIOP EUMETSAT/Spinning Enhanced Visible and Infrared Imager (SEVIRI)/Ash Detection and Height*

This animation shows the flow of the ash cloud for three days in early May 2010 on an hourly basis as sensed from a geostationary satellite.

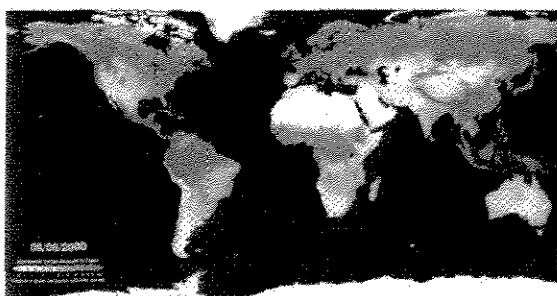
## HOW HAS THE ATMOSPHERIC CARBON UPTAKE FROM PLANTS CHANGED IN THE LAST DECADE?



*Terra - MODIS*

This animation depicts the deviation from normal carbon removed by plants per day from 2000-2009.

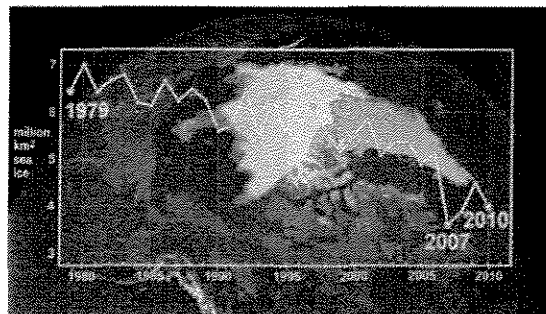
## ARCTIC SEA ICE MINIMUM EXTENT FOR 2010



*Terra - MODIS*

This animation shows the amount of atmospheric carbon removed by plants per day from 2000-2009.

## SEA ICE YEARLY MINIMUM 1979-2010

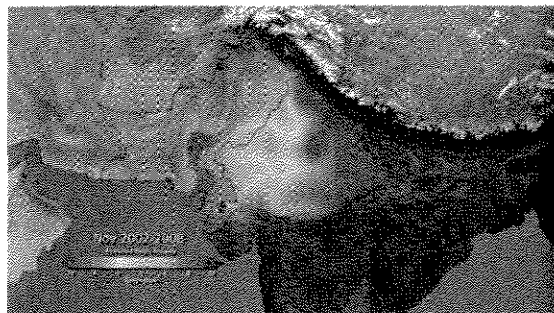


*DMSP Special Sensor Microwave/Imager (SSM/I)*

This visualization shows the annual Arctic sea ice minimum extent from 1979-2010 with a graph overlay to show the area in million square kilometers for each year's minimum day.



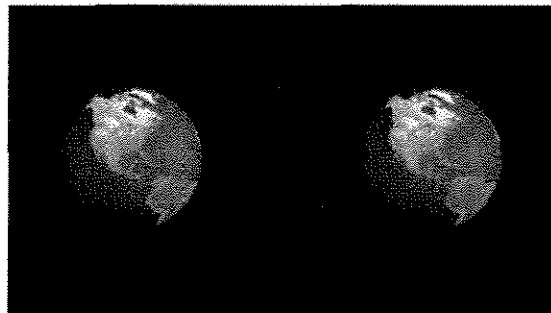
## GROUNDWATER DEPLETION IN INDIA REVEALED BY GRACE



*GRACE*

This visualization uses data from NASA's GRACE satellite to show groundwater depletion in India from 2002-2008.

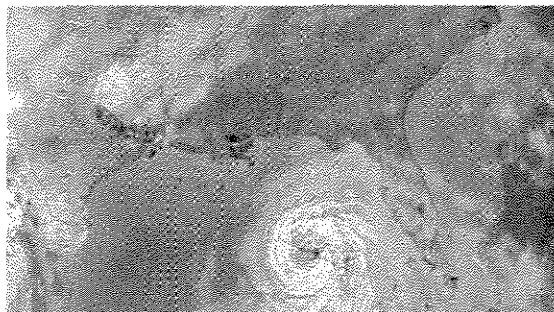
## 2007 GREENLAND MELT SEASON STUDY - STEREOSCOPIC VERSION



*QuikSCAT/SeaWinds/QuikSCAT Detection of Snowmelt on the Greenland Ice Sheet Terra/MODIS/Land Surface Temperature*

This animation displays two geophysical data products of the Greenland ice sheet side-by-side, showing MODIS data on the left and QuikSCAT data on the right.

## HURRICANE KATRINA HOT TOWERS



*Tropical Rainfall Measuring Mission*

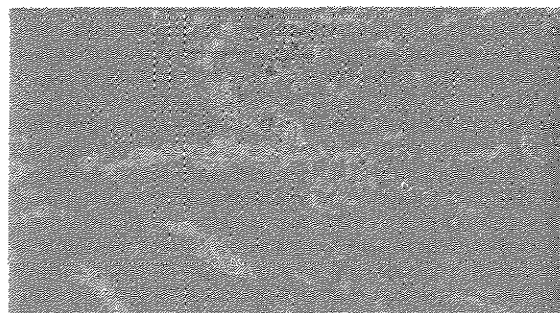
NASA's TRMM spacecraft allows us to look under Hurricane Katrina's clouds to see the rain structure on August 28, 2005 at 0324 UTC.

## NITROGEN DIOXIDE, OCTOBER 2004 - APRIL 2010



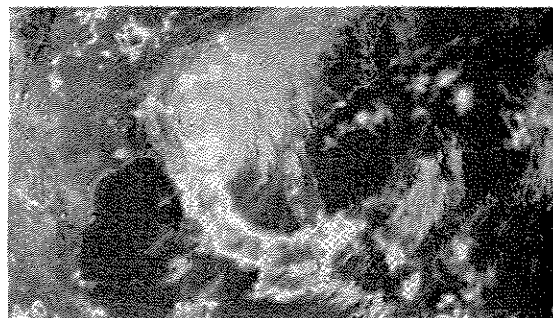
This animation shows monthly concentrations of nitrogen dioxide across the globe as measured by NASA's Aura satellite.

## TRMM-BASED MULTI-SATELLITE PRECIPITATION ANALYSIS, RAINFALL ACCUMULATION, AND FLOOD POTENTIAL



Data from the Tropical Rainfall Measuring Mission (TRMM) satellite can be used to calibrate rainfall estimates from other satellites. A TRMM-based, near-real time Multi-satellite Precipitation Analysis (MPA) from the NASA Goddard Space Flight Center monitors rainfall over the global Tropics.

## HURRICANE KATRINA - TRMM, AQUA, AND TERRA



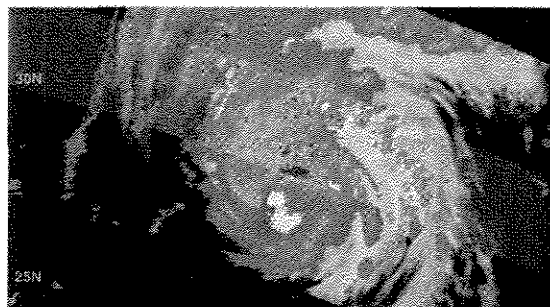
In early August 2005, Katrina was just a name. By September, it had become synonymous with the costliest and one of the deadliest hurricanes in U.S. history. These images and visualizations show just a few of the ways the TRMM, Aqua, and Terra satellites were able to capture views of the storm and its effects.

### APRIL 27-28, 2011 SOUTHEAST U.S. TORNADO OUTBREAK



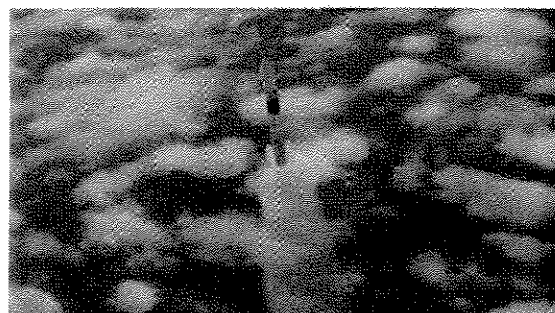
The TRMM satellite flew over severe thunderstorms that were spawning tornadoes over the eastern United States on 28 April 2011 at 0652 UTC (2:52 AM EDT). This 3-D perspective image shows data from the Precipitation Radar on TRMM and reveals the structure of the storms seen by the satellite.

### TYPHOONS PARMA AND MELOR



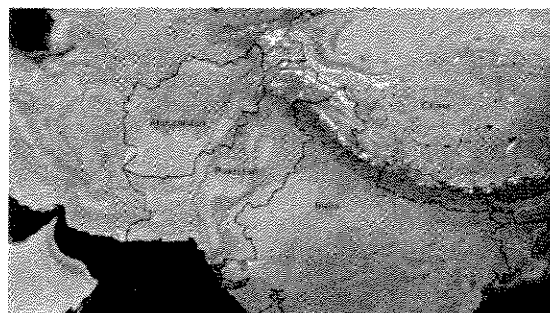
TRMM captured this image of Typhoon Melor at 20:06 UTC 6 October (5:06 am 7 October Japan standard time) as it was moving north-northeast towards southern Japan. In this image, rain rates in the center of the swath were obtained from the TRMM Precipitation Radar (PR), the only spaceborne precipitation radar of its kind.

### GLOBAL PRECIPITATION MISSION (GPM) LAUNCH AND DEPLOYMENT ANIMATION



This conceptual animation shows the launch and deployment of the GPM spacecraft.

### 2010 Pakistan Floods



Collection of satellite imagery, graph of average rainfall over the Indus River Basin, and a flood analysis map pieced together by UNOSAT, documenting the 2010 Pakistan Floods.

### Puyehue-Cordón Caulle Volcanic Complex

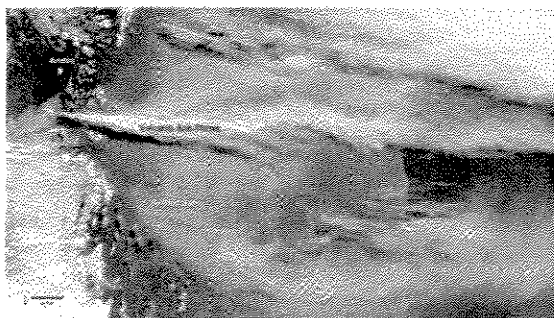
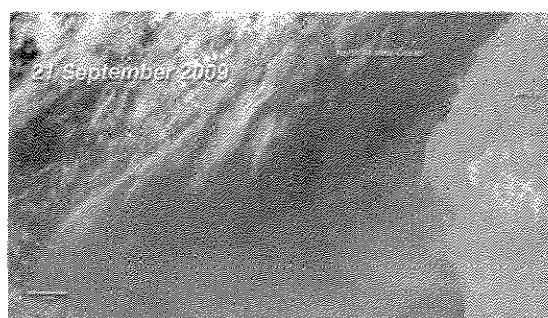


Image of Puyehue-Cordón Caulle Volcanic Complex taken on June 11, 2011, shows the path of the volcanic ash plume.

### Saharan Dust



A natural color image captured by NASA's Aqua satellite shows Saharan dust from Africa as it travels offshore on September 21, 2009.

### Wallow Wild Fire

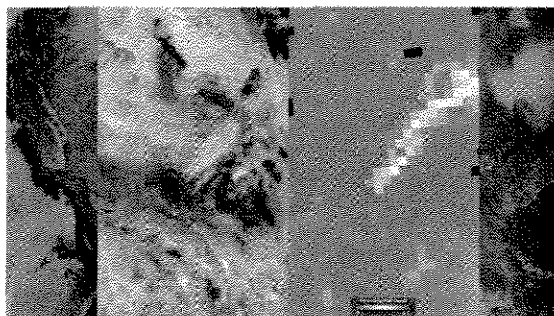


Image of the 2011 Wallow Fire in Arizona taken by the Multi-angle Imaging SpectroRadiometer (MISR) instrument onboard the Terra satellite. Smoke is visible in the derived Aerosol Optical Depth image.

### Eyjafjallajökull Volcano



These images reveal the extent and height of Iceland's Eyjafjallajökull volcanic ash plume on May 7, 2010.

## WORLD OF CHANGE

### Amazon Deforestation



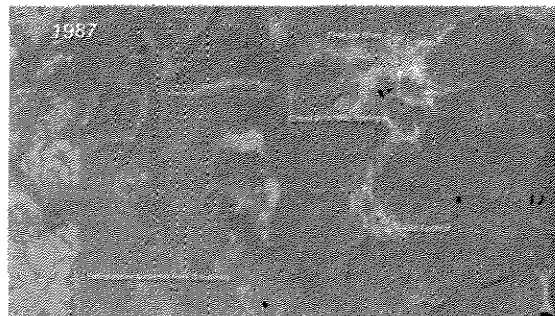
The state of Rondônia in western Brazil is one of the most deforested parts of the Amazon. This series shows deforestation on the frontier in the northwestern part of the state between 2000 and 2010.

### Antarctic Ozone Hole



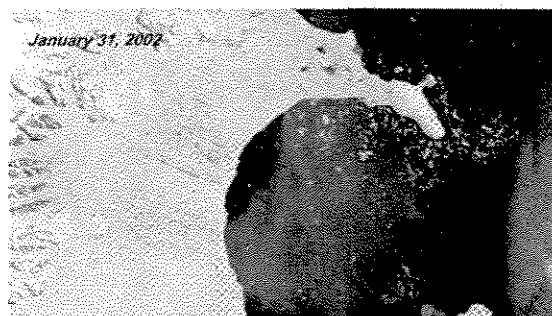
Because of differences in geography and climate, Antarctica sea ice extent is larger than the Arctic's in winter and smaller in summer. Since 1979, Antarctica's sea ice has increased slightly, but year-to-year fluctuations are large.

### Burn Recover Yellowstone



In 1988, wildfires raced through Yellowstone National Park, consuming hundreds of thousands of acres. This series of Landsat images tracks the landscape's slow recovery through 2010.

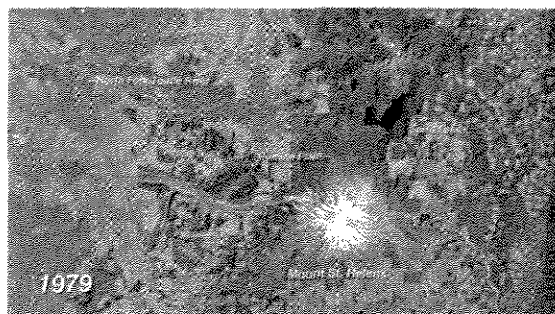
### Collapse Larsen-B Ice Shelf



In early 2002, scientists monitoring daily satellite images of the Antarctic Peninsula watched in amazement as almost the entire Larsen B Ice Shelf splintered and collapsed in just over one month. They had never witnessed such a large area disintegrate so rapidly.

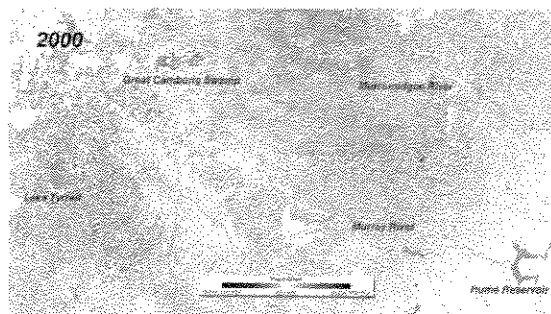
## WORLD OF CHANGE

### Devastation Recovery Mt. St. Helens



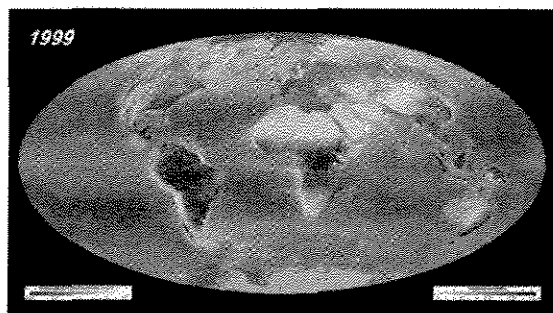
The devastation of the May 18, 1980, eruption of Mt. St. Helens and the gradual recovery of the surrounding landscape is documented in this series of satellite images from 1979–2010.

### Drought Cycles in Australia



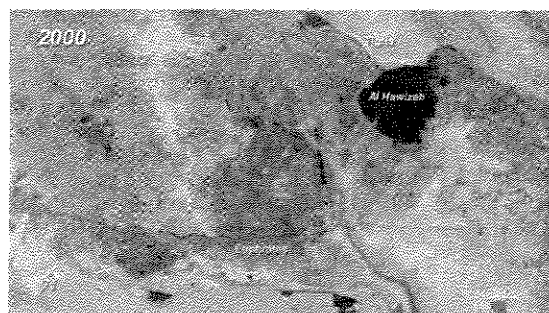
Drought has taken a severe toll on croplands in Southeast Australia during many years this decade.

### Global Biosphere



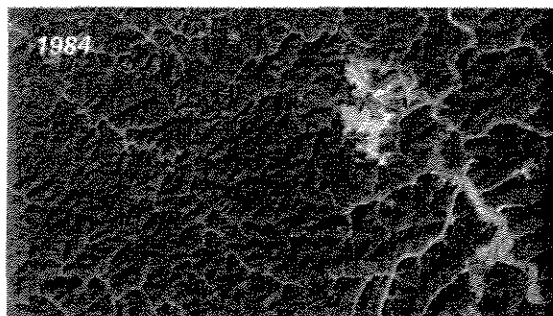
Earth would not be the planet that it is without its biosphere, the sum of its life. This series of images illustrates the variations in the average productivity of the global biosphere from 1999 to 2008.

### Mesopotamia Marshes



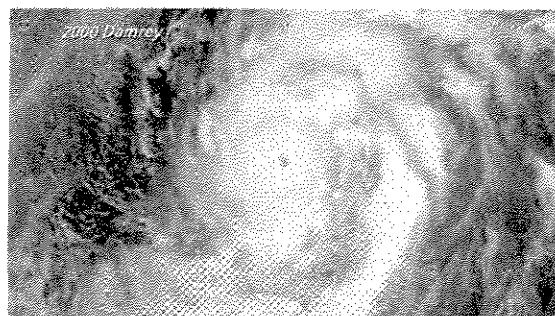
In the years following the Second Gulf War, Iraqi residents began reclaiming the country's nearly decimated Mesopotamian marshes. This series of images documents the transformation of the fabled landscape between 2000 and 2010.

### Mountaintop Mining, West Virginia



Based on data from NASA's Landsat 5 satellite, these natural-color (photo-like) images document the growth of the Hobet mine in Boone County, West Virginia, as it expands from ridge to ridge between 1984 and 2010.

### Severe Storms

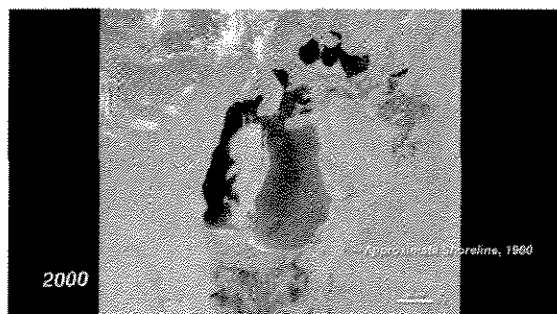


This collection of images featuring the strongest hurricane, cyclone, or typhoon from any ocean during each year of the past decade includes storms both famous—or infamous—and obscure.



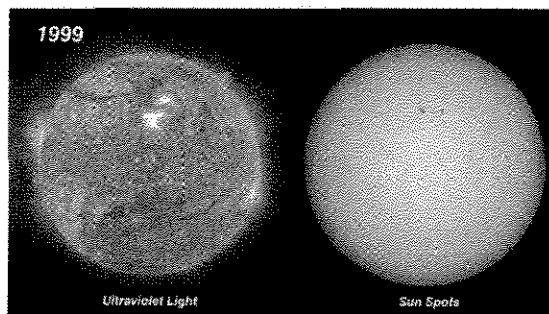
## WORLD OF CHANGE

### Shrinking Aral Sea



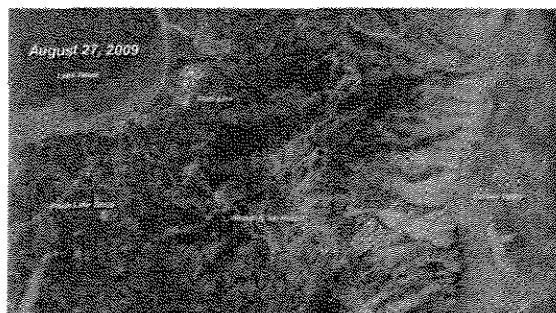
A massive irrigation project in the Kyzylkum Desert of central Asia has devastated the Aral Sea over the past 50 years. These images show the continued decline of the Southern Aral Sea in the past decade, as well as the first steps of recovery in the Northern Aral Sea in recent years.

### Solar Activity



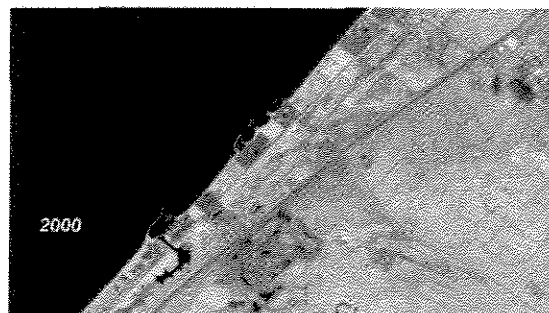
Images of sunspots and UV brightness document the 11-year cycle of solar magnetic activity. The series spans 1999–2010, capturing the most recent solar maximum and minimum, as well as the emergence of solar cycle 24.

### The Seasons of Lake Tahoe



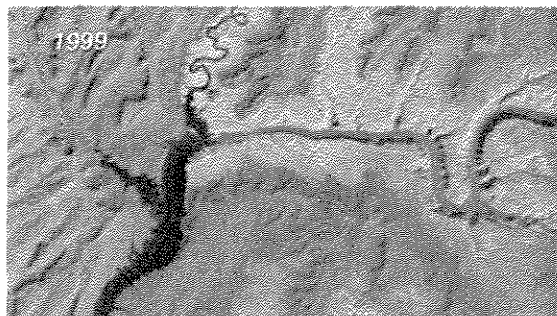
Perhaps the most familiar change in our changing world is the annual swing of the seasons. This series of images shows the effects of the seasons on the Lake Tahoe region between 2009 and 2010.

### Urbanization of Dubai



To expand the possibilities for beachfront tourist development, Dubai, part of the United Arab Emirates, undertook a massive engineering project to create hundreds of artificial islands along its Persian Gulf coastline.

### Water Level in Lake Powell



Combined with human demands, a multi-year drought in the Upper Colorado River Basin caused a dramatic drop in the Colorado River's Lake Powell in the early part of the 2000s. The lake began to recover in the latter part of the decade, but as of May 2011, it was still well below capacity.

### Yellow River Delta



Once free to wander up and down the coast of the North China Plain, the Yellow River Delta has been shaped by levees, canals, and jetties in recent decades.